

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference <b>MIRABILE 0003PCT</b>	<b>FOR FURTHER ACTION</b>	See Form PCT/IPEA/416
International application No. <b>PCT/US05/05539</b>	International filing date (day/month/year) <b>22 February 2005 (22.02.2005)</b>	Priority date (day/month/year) <b>20 February 2004 (20.02.2004)</b>
International Patent Classification (IPC) or national classification and IPC <b>IPC(7): F02B 53/04, 33/12, 75/22 and US Cl.: 123/226, 55.7, 55.5, 58.3, 53.6</b>		
Applicant <b>MIRABILE, NICHOLAS</b>		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 16 sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

a. ☒ (sent to the applicant and to the International Bureau) a total of 16 sheets, as follows:

☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) \_\_\_\_\_, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒ Box No. I Basis of the report

☐ Box No. II Priority

☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

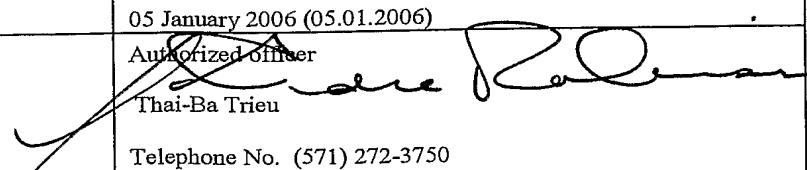
☐ Box No. IV Lack of unity of invention

☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

☐ Box No. VI Certain documents cited

☒ Box No. VII Certain defects in the international application

☐ Box No. VIII Certain observations on the international application

Date of submission of the demand <b>12 September 2005 (12.09.2005)</b>	Date of completion of this report <b>05 January 2006 (05.01.2006)</b>
Name and mailing address of the IPEA/ US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Authorized officer  Thai-Ba Trieu Telephone No. (571) 272-3750

Form PCT/IPEA/409 (cover sheet)(April 2005)

# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/US05/05539

## Box No. I Basis of the report

1. With regard to the language, this report is based on:

- ☐ the international application in the language in which it was filed.
- ☐ a translation of the international application into \_\_\_\_\_, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
- ☐ publication of the international application (under Rule 12.4(a))
- ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a))

2. With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages NONE as originally filed/furnished
- pages\* 1-15 received by this Authority on 21 September 2005 (21.09.2005)
- pages\* NONE received by this Authority on \_\_\_\_\_
- ☒ the claims:
- pages 16-19 as originally filed/furnished
- pages\* NONE as amended (together with any statement) under Article 19
- pages\* NONE received by this Authority on \_\_\_\_\_
- pages\* NONE received by this Authority on \_\_\_\_\_
- ☒ the drawings:
- pages 1/12-5/12 and 7/12-12/12 as originally filed/furnished
- pages\* 6/12 received by this Authority on 21 September 2005 (21.09.2005)
- pages\* NONE received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to the sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to the sequence listing (*specify*): \_\_\_\_\_

*\* If item 4 applies, some or all of those sheets may be marked "superseded."*

# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.  
PCT/US05/05539

**Box No. V** Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims <u>NONE</u>	YES
	Claims <u>1-20</u>	NO
Inventive Step (IS)	Claims <u>NONE</u>	YES
	Claims <u>1-20</u>	NO
Industrial Applicability (IA)	Claims <u>1-20</u>	YES
	Claims <u>NONE</u>	NO

## 2. Citations and Explanations (Rule 70.7)

Please See Continuation Sheet

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**

International application No.

PCT/US05/05539

**Box No. VII Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:

## Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

Claims 1-20 lacks novelty under PCT Article 33(2) as being anticipated by Daniels (US 2,189,728).

Regarding claims 1, 11 and 17, Daniels discloses a combustion engine comprising:

- an air intake (11) (See Figure 3, Page 2, lines 7-13);
- an air compressor (20) coupled to the air intake (11) (See Figure 3, Page 2, lines 7-13);
- a combustion chamber/a movable combustion chamber (8) coupled to the air compressor (20) (See Figures 3 and 5);
- a shuttle valve (29), placed between the air compressor and the combustion chamber, to seal off the combustion chamber from the air compressor during the combustion (See Figure 3, Page 2, Column 2, lines 35-47);
- a fuel supplier (12), coupled to the air compressor and the combustion chamber, that delivers fuel to the air after intake to provide a fuel/air mixture that has been compressed within the combustion chamber (See Figures 3 and 5, Page 2, Column 1, lines 7-22);
- a crankshaft (1,2), rotatably coupled to the air compressor, that operates the air compressor and to transfer power generated by the engine to a useful purpose (See Figures 1 and 3);
- a turbine piston (62), coaxially coupled to the crankshaft (See Figures 1 and 7), that travels in circular path and is adjacent to the combustion chamber and serves to seal the combustion chamber during combustion of an air/fuel mixture and passes over the combustion chamber allowing the combustion chamber to open wherein the turbine piston (13, 14) is driven by a force generated by combustion of the air/fuel mixture within the combustion chamber as the combusted fuel/ air mixture exits and is directed against the turbine piston to rotate and turn the crankshaft; and to move and direct a release of the combusted air/fuel mixture to drive turbine piston thereby rotating the turbine piston and turn the crankshaft, which converts the force of the combustion into mechanical energy (See Figures 1, 3, and 5, Page 2, Page 3, Column 1, lines 53-75, and Column 2, lines 1-12).

Regarding claims 2-4 and 12-14, Daniels further discloses the air compression being a reciprocating piston (54) within a compression chamber that draws air through the air intake (11) and compresses the air into combustion chamber (8) separate from the compression chamber (See Figure 3);

wherein the fuel is injected into the compression chamber prior to compression, and prior to combustion occurs (See Page 3, Column 2, lines 5875, and Page 4, Column 1, lines 1-20);

Regarding claims 5-6 and 15-16, Daniels further discloses an ignitor (14) within the combustion chamber (8) to ignite the fuel/air mixture at a fixed time to combust the fuel/air mixture therein, and the ignitor is a spark plug having a spark end located within

## Supplemental Box

the combustion chamber (8) (See Figure 3, Page 2, Column 1, lines 14-22).

Regarding claim 7-10, the method as claimed would be inherent during the normal use and operation of Daniels device as disclosed in the rejection above (See Figures 1, 3, and 5, Page 1, Column 2, lines 32-55, Pages 2- 3, lines 1-75, and Page 4, Column 1, lines 1-75, and column 2, lines 1-17).

Regarding claims 18-20, Daniels further discloses:

a second air intake (11) (See Figure 3, Page 2, lines 7-13);

a second air compressor (20) coupled to the second air intake (11) (See Figure 3, Page 2, lines 7-13);

a second combustion chamber/a movable combustion chamber (8) coupled to the second air compressor (20), and located opposed the combustion chamber (8) (See Figures 3 and 5);

a second shuttle valve (29), placed between the second air compressor and the second combustion chamber, to seal off the second combustion chamber from the second air compressor during the combustion (See Figure 3, Page 2, Column 2, lines 35-47);

a second fuel supplier (12), coupled to the second air compressor and the second combustion chamber, that delivers fuel to the air after intake to provide a fuel/air mixture that has been compressed within the combustion chamber (See Figures 3 and 5, Page 2, Column 1, lines 7-22);

a second turbine piston (62), coaxially coupled to the crankshaft (1,2) in tandem to the turbine piston (See Figures 1 and 7), that travels in circular path and is adjacent to the second combustion chamber and serves to seal the second combustion chamber during combustion of an air/fuel mixture and passes over the second combustion chamber allowing the second combustion chamber to open wherein the turbine piston (13, 14) is driven by a force generated by combustion of the air/fuel mixture within the second combustion chamber as the combusted fuel/ air mixture exits and is directed against the second turbine piston to rotate and turn the crankshaft (See Figures 1, 3, and 5, Page 2, Page 3, Column 1, lines 53-75, and Column 2, lines 1-12); and

a sweep turbine piston (62) coupled to the crankshaft and mounted diametrically opposed to the turbine piston to sweep out the spent combusted gases within the engine after the energy has been extracted therefrom (See Figure 3, Page 4, Column 1, lines 6-20 and 36-48);

wherein the turbine piston is generally wedge shaped (See Figure 7) with an inner surface having a radius of curvature generally equal to that of a lower path surface in which the turbine piston travels and an outer surface having a radius of curvature generally equal to that of an upper path surface in which the turbine piston travels (See Figure 7, Page 3, Column 1, lines 53-73).

Claims 1-20 have industrial applicability as set out in PCT Article 33(4), because the subject matter claimed can be made or used in industry to improve the performance of turbine piston engines.